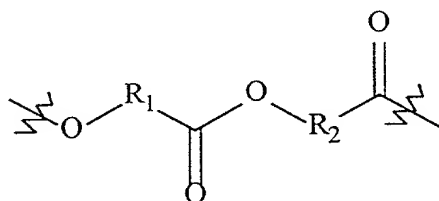


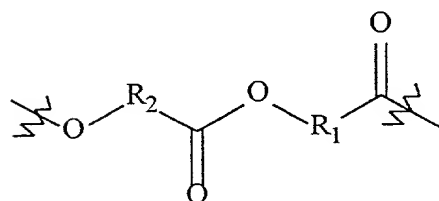
What is claimed:

1. A composition comprising a pre-formed, hydrolytically susceptible polyanionic polymer comprising:
at least one linking moiety comprising a hydrolytically susceptible bond; and
5 linked to the linking moiety at least two polyanionic polymer segments, wherein all polyanionic polymer segments in the polymer are linked to the whole by a said linking moiety, and 90% or more of the polyanionic polymer segments in the composition have molecular weight of 50 kd or less.
- 10 2. The composition of claim 1, wherein 90% or more of the polyanionic polymer segments in the composition have molecular weight of 40 kd or less.
- 15 3. The composition of claim 1, wherein the average molecular weight of the polyanionic acids segments in the composition is from 20 kd to 40 kd.
- 20 4. A method of making the composition of claim 1, comprising:
reacting by free radical-mediated polymerization (a) monomers adapted to create polyanionic polymer segments in the presence of crosslinking reagent adapted to create, following free-radical-mediated incorporation into
20 polymer, the linking moieties; and
contacting the reacting monomers with a chain-elongation terminator in an amount adapted to limit the molecular weight of the polyanionic polymer segments.
- 25 5. A composition comprising a pre-formed, hydrolytically susceptible polyanionic polymer comprising:
polyanionic polymer segments, wherein 90% or more of the polyanionic polymer segments in the composition have molecular weight of 50 kd or less; and
linking the polyanionic segments at least one linking moiety comprising

- (a) a core which is a C_1 to C_{12} alkylene with three or more linking oxy or thio groups or a mono or disaccharide with three or more terminal oxy groups;
- (b) linked to each linking oxy or thio, $-R^n-$, where n is zero or greater with the total sum of the n values being at least three, and the R^3 radicals are independently:



or



wherein the carbonyl radical is linked to the linking oxy or thio, and wherein R^1 and R^2 are independently methylene or ethylene which can be substituted with up to two C_1 to C_4 alkyls; and

- (c) the residue after incorporation into the polyanionic polymer segments of unsaturated moieties that are ester or ether linked to by oxy of R^3 .

6. The composition of claim 5, wherein the average molecular weight of the polyanionic acids segments in the composition is from 20 kd to 40 kd.

7. A method of making the composition of claim 5 comprising:

reacting by free radical-mediated polymerization (a) monomers adapted to create polyanionic polymer segments in the presence of crosslinking reagent adapted to create, following free-radical-mediated incorporation into polymer, the linking moieties; and

contacting the reacting monomers with a chain-elongation terminator in an amount adapted to limit the molecular weight of the polyanionic polymer segments.

- 5 8. A polyanionic polymer comprising:
two or more linearly linked polyanionic polymer segments linked via terminating oxo or thio moieties derived from a hydroxide or thiol moieties; and linker moieties cleavable at internal amide, ester or thioester bonds linking the linkers to form the linear polyanionic polymer segments.

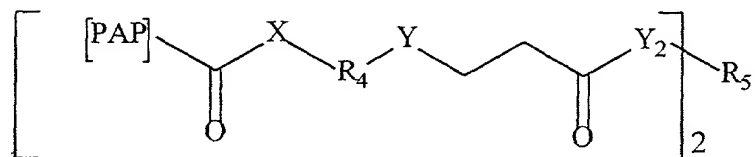
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9. The polyanionic polymer of claim 8, wherein the polyanionic polymer comprises a monomer moiety which consists of atoms selected from carbon, hydrogen, oxygen and sulfur and comprises carbon and hydrogen.

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10. The polyanionic polymer of claim 8 wherein the linearly linked polyanionic segments are crosslinked hydrolytically susceptible linking moieties.

11. A polyanionic polymer comprising:
polyanionic polymer segments (PAP) containing carboxylates; and
20 linkers crosslinking the polyanionic polymer segments having the structure:



- 25 , wherein the illustrated carbonyls adjacent to PAP are derived from the carboxylates, and wherein X, Y and Y² are independently S, O or NH and R⁴ is a straight chain C₁-C₁₀ alkyl which can be substituted with up to two C₁-C₄ alkyls and R⁵ is an hydrolytically susceptible linking moiety comprising C, H and two or more heteroatoms which can be O, S or N, the O, S and N atoms all participating in hydrolytically susceptible bonds or ether or thioether bonds.

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12. A polyanionic polymer comprising hydrolytically susceptible bonds, the polyanionic polymer comprising:

- two or more polyanionic polymer segments;
- linking moieties coupling the polyanionic polymer segments, wherein the linking moieties comprise (I) or (II) below or both:

(I) a segment joined via amide, ester or thioester bonds incorporating an acyl or acyl analog moiety of the polyanionic polymer, wherein the segment comprises:

(a) a C₁ to C₁₂ alkylene with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds, provided that at least one of the amide, ester or thioester bonds is other than an ester bond; or

(b) an amide, ester or thioester linked polymeric segment of (i) hydroxy or thiol C₂-C₅ carboxylic acid or hydroxy proline derivatives and (ii) {(a) a C₁ to C₁₂ alkylene moiety with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds or (b) an α,ω -diol or a chain extended α,ω -diol}; or

(c) an amide, ester or thioester linked polymeric segment of (i) one or more hydroxy or thiol C₂-C₅ carboxylic acid or hydroxy proline derivatives, (ii) {(a) a C₁ to C₁₂ alkylene moiety with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds or (b) one or more α,ω -diols or chain extended α,ω -diols} and (iii) one or more carbonyldioxy moieties; or

(d) an amide, ester or thioester linked polymeric segment of (ii)(a) a C₁ to C₁₂ alkylene moiety with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds, (ii)(b) one or more chain extended α,ω -diols and (iii) one or more carbonyldioxy moieties; or

(e) an amide, ester or thioester linked polymeric segment of (ii)(b) one or more chain extended α,ω -diols and (iii) one or more carbonyldioxy moieties; or

- (f) a direct anhydride formed between acid moieties of the polyanionic polymer; or
- (g) an anhydride bridge formed between acid moieties of the polyanionic polymer with carbonyl bridge; or

5 (I) the residue after a crosslinking reaction of:

- (a) two or more terminal acrylate or methacrylate moieties providing unsaturated bonds available for the crosslinking reaction;
 - (b) a segment joining the terminal acrylate or methacrylate moieties via amide, ester or thioester bonds incorporating an acyl bond of the acrylate or
- 10 methacrylate moieties, wherein the segment comprises:

- (1) a C₁ to C₁₂ alkylene with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds, provided that at least one of the amide, ester or thioester bonds is other than an ester bond; or

- 15 (2) an amide, ester or thioester linked polymeric segment of (i) hydroxy or thiol C₂-C₅ carboxylic acid or hydroxy proline derivatives and (ii) {(a) a C₁ to C₁₂ alkylene moiety with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds or (b) an α,ω -diol or a chain extended α,ω -diol}; or
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- (3) an amide, ester or thioester linked polymeric segment of (i) one or more hydroxy or thiol C₂-C₅ carboxylic acid or hydroxy proline derivatives, (ii) {(a) a C₁ to C₁₂ alkylene moiety with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds or (b) one or more α,ω -diols or chain extended α,ω -diols} and (iii) one or more carbonyldioxy moieties; or

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- (4) an amide, ester or thioester linked polymeric segment of (ii)(a) a C₁ to C₁₂ alkylene moiety with terminal linkers selected from oxy, thio (-S-) or imino (-NR-, where R is H or C₁-C₆ alkyl) incorporated into the amide, ester or thioester bonds, (ii)(b) one or more chain extended α,ω -diols and (iii) one or more carbonyldioxy moieties; or
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